



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,071	01/14/2004	Masaru Odajima	TOW-059	5108
959	7590	02/21/2006	EXAMINER	
LAHIVE & COCKFIELD 28 STATE STREET BOSTON, MA 02109			ABOAGYE, MICHAEL	
			ART UNIT	PAPER NUMBER
			1725	

DATE MAILED: 02/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

Election/Restrictions

1. This application contains claims 6-9 drawn to an invention nonelected without traverse. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Litwinski et al.

Litwinski et al. discloses a friction stir welding method of joining cylindrical portions that are abutted against each other end to end by moving a rotating probe relatively along said abutment portion while pressing said probe against one surface of said abutment portion at which an end of a first cylindrical member and an end of a second cylindrical member are butted together, said friction stir welding method comprising the steps of externally fitting said first and second cylindrical members on a back-up tool so that another surface of said abutment portion is in close contact with an outer circumferential surface of said back-up tool; performing friction stir welding on said one surface of said abutment portion while retaining said other surface of said abutment

Art Unit: 1725

portion with said back-up tool; and separating said back-up tool from said other surface of said abutment portion after said friction stir welding(column1, line 10 – column 2, line 67, and column 5, lines 3- 48). Note that the “backing jig” disclosed by the applicants’ is considered as a back-up tool, note also that the Litwinski et al. back-up tool is operable to retract to enable separation of the back-up tool from the surface of the abutment portion after the friction stir welding.

Regarding claim 4, Litwinski et al shows a stir welding method, wherein said first and second cylindrical members are welded by said friction stir welding along said abutment portion while a pressing force is applied in a direction substantially perpendicular to a direction of insertion of the welding tool (T). Note that in (Figures 2, 5 and 7) the welding tool T presses on the abutment portion in a direction perpendicular to its direction of insertion on the abutment portions.

Regarding claim 5, Litwinski et al., note that the outer circumferential surface of said back-up tool has a completely circular shape, and circumferences of said ends of said first and second cylindrical members, which are in close contact with said outer circumferential surface, have an identical length (column 2, lines 43- 67, and figure 4).

Litwinski et al discloses all the elements of claim I and further discloses a back-up tool which is rigid, made of material harder and melts at a higher temperature than the work piece (cylindrical members). Also cylindrical members undergo thermal growth and expansion under friction stir welding (column 3, line 30 – column 4, line 29), but

Art Unit: 1725

does not specifically show that the first and the second cylindrical members relatively expand as compared to the back-up tool.

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to have known that the back-up tool made from a material harder and melts at a higher temperature than the cylindrical members may under go relatively less expansion under the heat of friction stir welding as compared to the cylindrical members to enable the back-up tool to be separated from the first and second cylindrical members after the said friction stir welding ((column 3, line 30 – column 4, line 29 and column 6, lines 48 - 60).

Response to Arguments

4 The examiner acknowledges the applicants' amendments received by USPTO on November 9, 2005 and December 6, 2005. The correction to figure 9 of the drawing is approved.

5. Applicant's arguments filed November 9, 2005 have been fully considered but they are not persuasive.

With respect to the applicants' remarks/arguments set forth on pages 5 – 9 of the amendment, the examiner respectively disagree with the applicants' characterization of Litwinski et al. reference as not disclosing the limitation: externally fitting the first and the second cylindrical members on a backing jig having a different thermal expansion while the first and second members are relatively expanded and then relatively

Art Unit: 1725

contracted as compared with the backing jig so that the entire circumference of another surface of the abutment portion is in close contact with the entire outer circumferential surface of the backing. Attention is drawn to (Litwinski et al., figure 2, and column 6, lines 48 – 60) which recites the advantages of the backing tool as discloses, wherein said backing tool is configured to counteract the thermal expansion of the workpieces as a result of friction heating during the welding operation, so that the workpieces does not expand and lift away from the shoes (backing tool). It is noted that for the backing tool to be able to accomplish the support as set forth above, it should be apparent that the thermal expansion coefficient of the backing tool is relatively different from the workpieces. It is deemed that Litwinski et al. reference is proper and therefore the rejection of claims 1, 4 and 5 remains valid under 35 U.S.C. 103(a).

Conclusion

6. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 1725

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Aboagye whose telephone number is 571-272-8165. The examiner can normally be reached on Mon - Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AM
AM



Michael Aboagye
Assistant Examiner
Art Unit 1725

02/17/2006

KEVIN KERNS *Kevin Kerns 2/17/06*
PRIMARY EXAMINER